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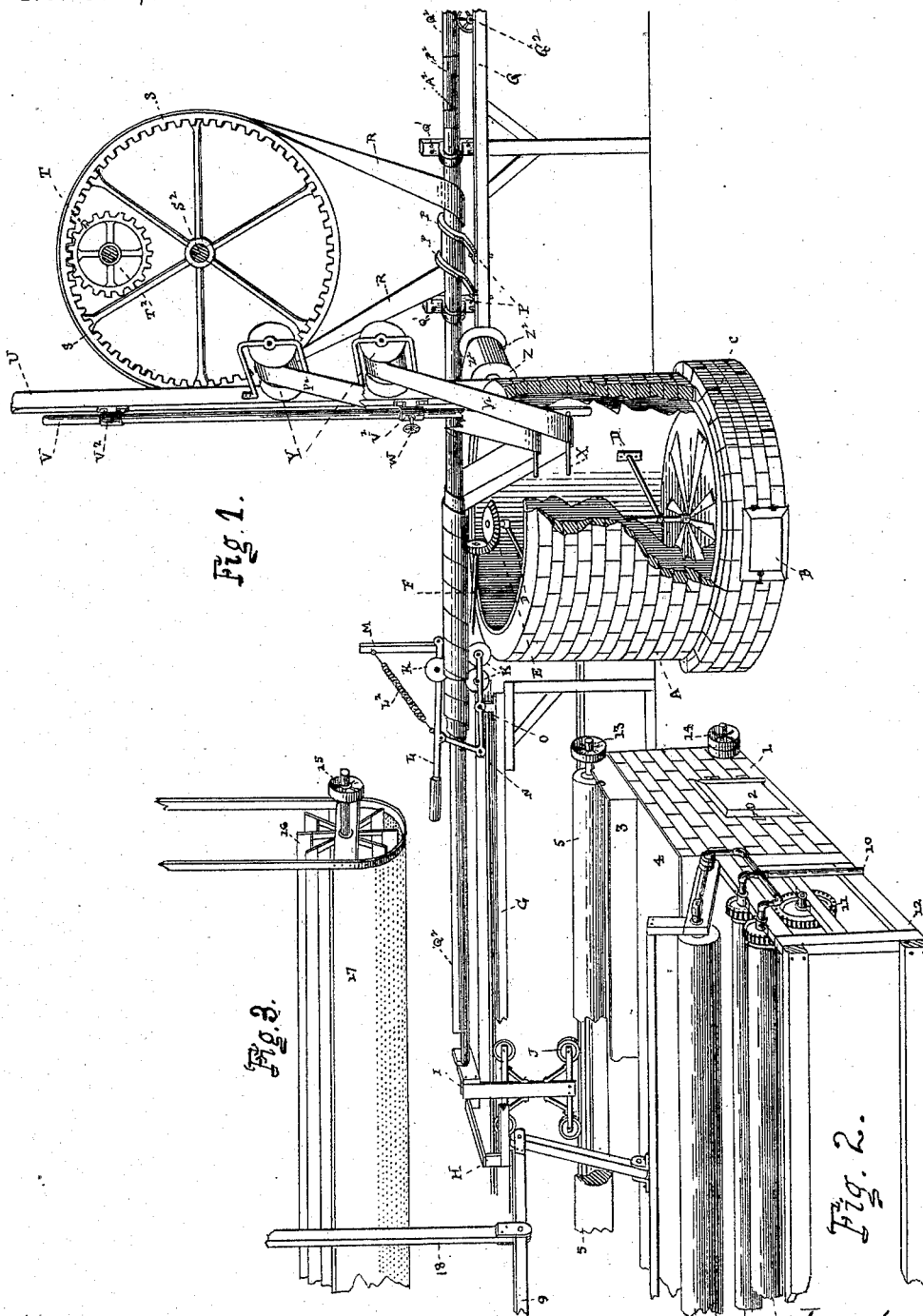
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J. & D. J. SHULTIS.

MACHINE FOR THE MANUFACTURE OF ASPHALTUM PIPE.

No. 522,946.

Patented July 10, 1894.



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(No Model.)

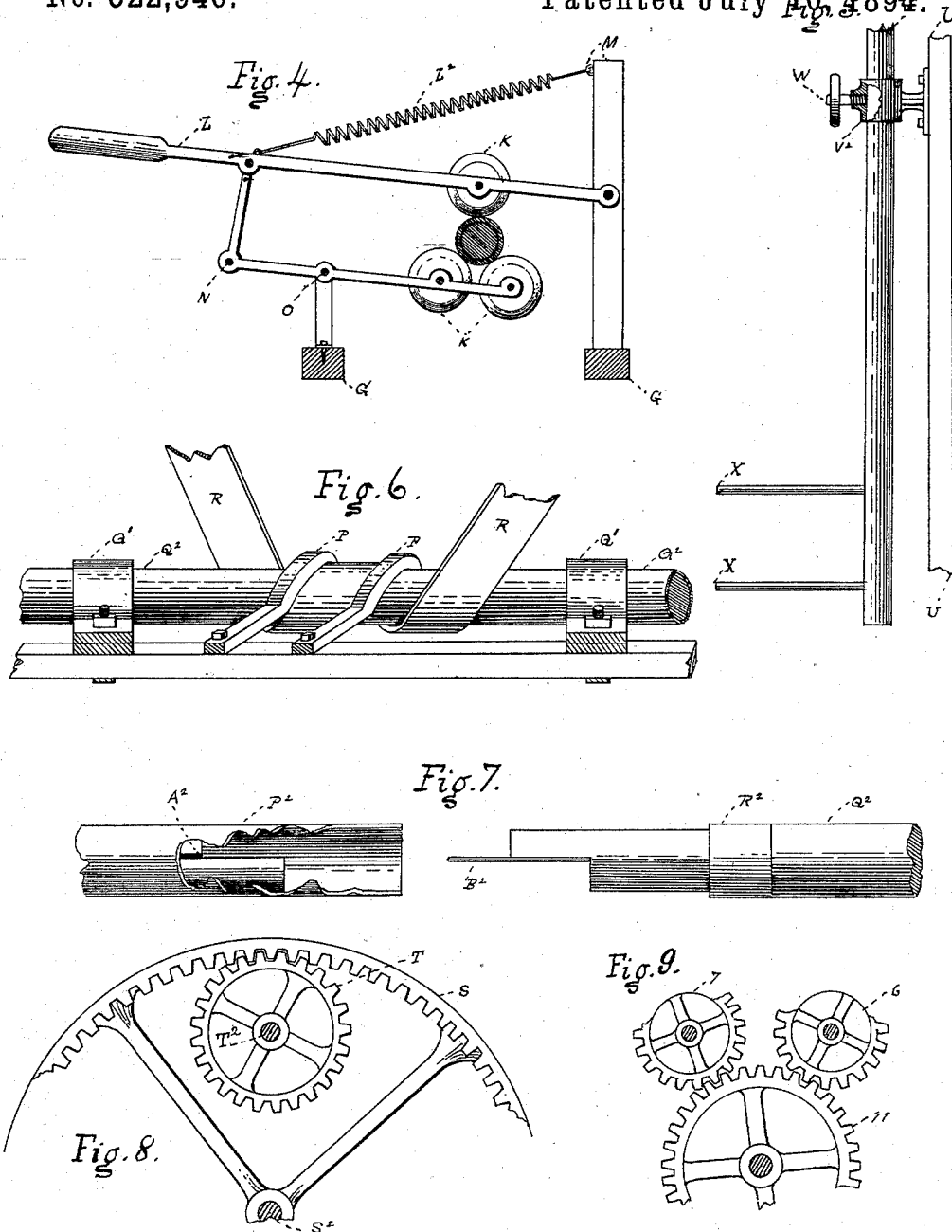
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# UNITED STATES PATENT OFFICE.

JORDAN SHULTIS AND DUANE J. SHULTIS, OF LOS ANGELES, CALIFORNIA.

## MACHINE FOR THE MANUFACTURE OF ASPHALTUM PIPE.

SPECIFICATION forming part of Letters Patent No. 522,946, dated July 10, 1894.

Application filed December 7, 1892. Serial No. 454,415. (No model.)

*To all whom it may concern:*

Be it known that we, JORDAN SHULTIS and DUANE J. SHULTIS, citizens of the United States, and residents of the city of Los Angeles, in the county of Los Angeles, State of California, have invented certain new and useful Improvements in Machines for the Manufacture of Asphaltum Pipe; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to a new and very useful machine for the manufacture of asphaltum pipe for general use, the description of which will be hereinafter more fully set forth.

The following description fully explains the nature of our said invention and the manner in which we proceed to construct, apply and use the same. We attain these objects by the mechanisms illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the machine showing all parts of the mechanism as constructed and operated in the manufacture of asphaltum pipe. Fig. 2 is a perspective view of the finishing furnace, the top of which consists of a suitable metal plate of the desired thickness and of any suitable size. To one side and on top of the plate is placed a suitable sized longitudinal tank for holding prepared asphaltum, and arranged as desired thereon is a coating roller, and on one side of said furnace is placed and made a part thereof a frame, upon which are arranged the heated rollers connected to steam pipes from the boiler or any other suitable device whereby the result of heating as desired may be accomplished. Fig. 3 is a perspective view of part of the concrete screening apparatus which hangs directly over the metal plate or top of furnace upon which the screenings fall, while the pipe is being rolled thereon after being coated. Fig. 4 is a side view of the three circular knives and the mechanisms for operating the same, and also their relative positions when operated upon by the lever handle, in cutting the pipe in desired lengths during the process of manufacture. Fig. 5 is a perspective view of portions of the adjustable shaft, having at its lower end two or more projecting arms for holding and guiding the

fiber bands or cloth as they come from the spools and pass through the asphaltum mixture in the tank. Fig. 6 is a perspective view of the outer end of the mandrel or core, and parts of all the mechanisms for operating the same during the process of forming and manufacturing asphaltum pipe. Fig. 7 represents the coupling ends of the mandril or cores, and the manner of coupling same together during the process of forming the pipe around the said core or mandrel. Fig. 8 represents a portion of the gear wheels carrying the feed belt, which operates and feeds the mandrels or cores during the process of forming or manufacturing asphaltum pipe. Fig. 9 represents a portion of the gear wheels connected to the heated rollers for operating same, in finishing asphaltum pipe.

Similar letters refer to similar parts throughout the different views.

"A" is a round iron tank of suitable size and depth, and mounted upon a round brick or stone furnace "B." "A<sup>2</sup>" an opening in notched end of coupling points. "B<sup>2</sup>" metal strip. "C" agitating wheel. "D—D" brace arms. "E" beveled gear wheels. "F" driving shaft. "G" frame bench upon which are arranged and secured pulleys "G<sup>2</sup>," and "H" a traveling frame at the forward end of which are secured the circular knives and operated by the feed of the pipe, when pressure is brought to bear upon the knives when it is desired to cut the pipe in suitable lengths. "I" traveling carriage frame for carrying the pipe. "J" the wheels upon which the carriage frame is mounted, and which travels below the carrying frame "H." "K—K" the circular knives. "L" handle for operating the knives by pressing on same. "L<sup>2</sup>" spiral spring, attached to handle "L" and standard "M," is for the purpose of releasing the circular knives from the pipe.

"N" and "O" represent the pivotal joints connected to the circular knives. "P" guide arms or stops for holding feed belt "R" in one position while feeding the mandrel or cores. "P<sup>2</sup>" sleeve holding and coupling the cores "Q<sup>2</sup>." "Q'—Q'" guide boxes for the mandrels or cores "Q<sup>2</sup>" to travel through while forming the asphaltum pipe. "R<sup>2</sup>" is a lead band near the coupling ends. "S" large gear wheel. "T" small driving gear

wheel. "T<sup>2</sup>" the shaft of same. "U" an upright standard secured to ceiling and bench "G," to which are secured guide boxes "V<sup>2</sup>" and in which is placed an adjustable shaft 5 "V" having arms "X—X" near the bottom thereof, and in the lower guide box "V<sup>2</sup>" is a set screw "W" for holding said shaft in any desired position. "Y" the spools or guide pulleys for feeding off any suitable fiber or cloth "Y<sup>2</sup>." "Z" spool or guide pulley for feeding off continuous strips of suitable paper "Z<sup>2</sup>" as desired.

By reference to Figs. 2 and 3 it will be seen that No. 1 is a longitudinal iron tank or kettle of suitable width and depth, and surrounded by brick work if desired, at the bottom of which is arranged the furnace 2, and 3 asphaltum tank. 4—the iron top plate of the steam chest and furnace. 5—the asphaltum coating roller. 6, 7 and 8 the steam heated rollers for finishing asphaltum pipe. 9 is the lever frame pivotally constructed which operates the heated roller 8 when desired. 10—steam pipes which supply steam 25 or hot air to the cylinder rollers 6, 7 and 8. 11—the gear wheels for operating rollers. 12—frame upon which are mounted and operated the heated rollers. 13—band pulley secured to the asphaltum coating roller. 14—operating and loose pulleys. 15—band pulley. Connected to the screening wheel 16, and 17 is the long "U" shaped screening trough suspended from the ceiling directly over the top plates 4 of the furnace 1. 18—30 suspended hanger from the ceiling to which is pivotally attached the lever arm 9 for operating the steam cylinder roller 8.

In constructing our machine for the manufacture of asphaltum pipe for general use, 40 we first construct a suitable furnace "B" and upon the same a suitable sized iron kettle or tank "A" is placed. The outer side is lined up with brick to hold the heat. Arranged on the inside of the said tank "A" is a stirring or agitating apparatus consisting of a paddle wheel "C" secured to the bottom end of a shaft suspended in the center of the tank "A" by arms "D"—"D," and on the top of this suspended shaft is secured a beveled cog 50 wheel "E," having a smaller one operating the same which is secured to the end of the operating shaft "F;" and attached to one side of the tank and to the ceiling, is an upright standard "U" to which are secured two 55 or more guide boxes "V<sup>2</sup>" into which the adjustable shaft "V" is adjusted into the tank "A" and out of the same as desired, and held in position by set screw "W." Also to this upright standard "U" are secured three or 60 more large spools. From the lower spool "Z" strips of any desired width of paper are unwound upon the mandrel or cores "Q<sup>2</sup>," and in like manner are the unwoven or woven strips of burlap "Y<sup>2</sup>" taken off the two spools 65 "Y" and wound around the mandrel or core "Q<sup>2</sup>" over the layer of paper "Z<sup>2</sup>." The burlap "Y<sup>2</sup>" covers each seam of the paper and

the last layer of burlap strip from the second burlap spool covers the last seam made by each layer of fiber or cloth. Before this 70 operation is begun, the mandrel or core "Q<sup>2</sup>" is placed in position as shown in Fig. 1 and into the guide boxes "Q'—Q'," and the feed band "R" is given one turn around the core or mandrel "Q<sup>2</sup>." This one turn which forms 75 a band like around the mandrel or core, is then placed between the two stationary guide arms "P—P" which hold the belt "R" in one position, at the same time producing a free rectilinear rotary movement of the mandrel 80 or core "Q<sup>2</sup>," thus with great accuracy keeping up the supply of cores or mandrels "Q<sup>2</sup>" by coupling a new section of the core as fast as the feed belt "R" requires the supply, and as each section of the core "Q<sup>2</sup>" is covered 85 or the pipe is perfectly formed thereon, it is run out and cut off by the circular knives "K—K" at the point of coupling, when the same is uncoupled and placed in the asphaltum vat "3" beside the coating roller "5," 90 when the same is coated as desired; after which the new formed pipe is removed from the vat or tank "3" onto the heated plate "4," over which it is rolled while the sand or pulverized concrete is screened down upon it 95 from the screenings trough "17." After this process has been suitably performed and the required thickness has been produced, the pipe, which continues to retain the core "Q<sup>2</sup>," is then placed between the heated rollers "6," 100 "7" and "8," and under a great pressure is thoroughly rolled smooth, after which it is removed and placed upon racks to harden, when the core "Q<sup>2</sup>" is removed. The core 105 can be removed at any time, as the first coating of paper "Z<sup>2</sup>" is wound around the cores for the purpose of preventing any asphaltum adhering to the cores and enabling the same to be removed freely.

The operation of forming the pipe over the 110 cores "Q<sup>2</sup>" consists in the following: The fiber or burlap strips of suitable width are supplied from spools "Y," passing through a prepared mixture contained in tank A. A suitable composition such as asphaltum, slaked 115 lime, salt, liquid asphaltum, or crude petroleum may be used. These ingredients are kept at a heat of from 350° to 420°, and as these strips of fiber or burlap pass from the said mixture they are wound around the 120 whirling mandrel or core "Q<sup>2</sup>," which has been previously wound over by paper strips "Z<sup>2</sup>," and the process of winding the burlap strips when thoroughly soaked in the mixture of asphaltum carries much of the mixture or 125 material as it winds around the core and forms the pipe, which hardens almost as fast as applied.

Having thus fully described our invention, what we claim, and desire to secure by Letters 130 Patent, is—

1. In a machine for making asphaltum pipe, the combination with a tank for containing a heated liquid composition, a mandrel ar-

5 ranged above the tank, a roll bearing a paper strip to be wound upon the mandrel, spools bearing suitable material to be immersed in the composition and wound upon the paper strip, of mechanism for imparting a rectilinear rotary motion to the mandrel.

10 2. In a machine for making asphaltum pipe, the combination with a tank for containing a heated liquid composition, a mandrel arranged above the tank, spools bearing suitable material to be immersed in the composition and wound upon the mandrel, of mechanism for imparting a rectilinear rotary motion to the mandrel and a knife co-acting with the mandrel to cut the pipe into desired lengths.

15 3. In a machine for making asphaltum pipe, the combination of a tank for containing a heated liquid composition, a mandrel arranged above the tank, a shaft carrying arms located within the tank, spools bearing a suitable material adapted to pass around the said arms to be immersed in the composition and be wound upon the mandrel, and mechanism for imparting a rectilinear rotary motion to the mandrel.

20 4. In a machine for making asphaltum pipe, the combination of a tank for containing a heated liquid composition, a mandrel arranged above the tank, a vertically adjustable shaft carrying arms located within the tank, spools bearing a suitable material adapted to pass around the said arms to be immersed in the composition and be wound upon the mandrel, and mechanism for imparting a rectilinear rotary motion to the mandrel.

25 5. In a machine for making asphaltum pipe, the combination with a tank for containing a heated liquid composition, a mandrel arranged above the tank, a vertically adjustable shaft

carrying arms located within the tank, spools bearing a suitable material adapted to pass around the said arms to be immersed in the composition and be wound upon the mandrel, of mechanism for imparting a rectilinear rotary motion to the mandrel, and a knife co-acting with the mandrel to cut the pipe into desired lengths.

30 6. A machine for making asphaltum pipe, comprising a tank for containing a heated liquid composition, a mandrel arranged above the tank, spools bearing suitable material to be immersed in the composition and be wound upon the mandrel, mechanism for imparting a rectilinear rotary motion to the mandrel, a knife co-acting with the mandrel to cut the pipe into desired lengths, a furnace supporting a tank containing heated asphaltum, a roller in the latter tank for coating the pipe with asphaltum, a screening-trough for sprinkling sand or the like on the pipe, a heated plate on the furnace for drying the pipe, and heated rollers for shaping the pipe.

35 7. In a machine for making asphaltum pipe, a tank for containing a heated liquid composition, an agitating wheel working therein, a mandrel arranged above the tank, spools bearing suitable material to be immersed in the composition and wound upon the mandrel, in combination with mechanism for imparting a rectilinear rotary motion to the mandrel and a knife co-acting with the mandrel to cut the pipe into desired lengths.

In witness whereof we have hereunto affixed our signatures in presence of two witnesses.

JORDAN SHULTIS.  
DUANE J. SHULTIS.

Witnesses:

A. B. SMITH,  
L. A. WARD.